Public Notice

U S Army Corps
of Engineers
Huntington District

In reply refer to Public Notice No.	Issuance Date:
2005-1057-TUS	**March 17, 2008**
Stream:	Closing Date:
Spencer Creek	**April 16, 2008**

Please address all comments and inquiries to:
U.S. Army Corps of Engineers, Huntington District
ATTN: CELRH-OR-F Public Notice No. (*reference above*)
502 Eighth Street
Huntington, West Virginia 25701-2070 Phone: (304) 399-5210

PUBLIC NOTICE: The purpose of this public notice is to inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest. We hope you will participate in this process.

REGULATORY PROGRAM: Since its early history, the U.S. Army Corps of Engineers (Corps) has played an important role in the development of the nation's water resources. Originally, this involved construction of harbor fortifications and coastal defenses. Later duties included the improvement of waterways to provide avenues of commerce. An important part of our mission today is the protection of the nation's waterways through the administration of the Corps Regulatory Program.

SECTION 10: The Corps is directed by Congress under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) to regulate all work or structures in or affecting the course, condition or capacity of navigable waters of the United States (U.S.). The intent of this law is to protect the navigable capacity of waters important to interstate commerce.

SECTION 404: The Corps is directed by Congress under Section 404 of the Clean Water Act (33 USC 1344) to regulate the discharge of dredged and fill material into all waters of the United States, including wetlands. The intent of the law is to protect the nation's waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical and biological integrity.

TO WHOM IT MAY CONCERN: The following application has been submitted for a Department of the Army Permit under the provisions of Section 404 of the Clean Water Act.

APPLICANT: Jeffco Resources, Inc.
Mr. Michael Carapellotti
PO Box 1298
Steubenville, Ohio 43952

LOCATION: The project area is located in jurisdictional waters of the United States in the Spencer Creek watershed. The site, identified by the applicant as the North Barnesville site, is located one mile northwest of Barnesville and west of State Route 800 in Warren Township, Belmont County, Ohio (17 S 40.0071 -81.1878).

DESCRIPTION OF PROPOSED WORK: The applicant proposes to place fill material into waters of the United States in association with the construction of a surface coal mine operation. According to the applicant, the purpose of the project is to recover available coal reserves in the project area.

Waters of the United States within the 390 acre project area include 25,740 linear feet of stream, 2.47 acres of wetlands and 0.54 acre of open water pond. Following the identification of waters on-site, the applicant modified their project limits to avoid 11,840 linear feet of stream, 1.99 acres of wetlands and 0.54 acre of open water pond. A total of 13,900 linear feet of stream, including 5,830 linear feet of perennial stream, 7,190 linear feet of intermittent stream and 880 linear feet of ephemeral stream, as well as 0.48 acres of wetlands are within the modified project limits. Each of these waters was determined to exhibit a hydrologic connection to tributaries in the Spencer Creek watershed. Spencer Creek is a tributary of the Tuscarawas River, a traditional navigable water of the United States.

The applicant requests authorization to discharge fill material into a total of 11,260 linear feet of stream in association with the construction of road crossings, sediment ponds and coal removal. Of this total, 4,670 linear feet of perennial stream, 5,710 linear feet of intermittent stream and 880 linear feet of ephemeral stream are proposed to be impacted. An additional 550 linear feet of stream would be secondarily and temporarily impacted in association with sediment transport. The applicant also requests authorization to discharge dredged and fill material into 0.07 acre wetland in association with pond construction and coal removal activities.

The applicant indicates the preferred mining plan would involve the removal of approximately 1,000,000 tons of coal from the #9 coal seam over a period of approximately seven years. The applicant proposes to extract coal reserves through the methods of contour and auger mining. Because of the expected timeframe necessary to remove available coal reserves, the applicant requests any issued permit for this proposal expire no earlier than December 31, 2015.

Details concerning individual streams proposed to avoided, streams proposed to be impacted, their quality (as assessed by the Qualitative Habitat Evaluation Index (QHEI) protocol), and purpose of proposed impact are attached (Tables 1 and 2). Details concerning wetlands proposed to be impacted, their quality (as assessed by the Ohio Rapid Assessment Method (ORAM) protocol) and purpose of proposed impacts are attached (Table 3).

MITIGATION: Under the preferred alternative, the applicant proposes to avoid direct impacts to 14,480 linear feet of stream, 2.4 acres of jurisdictional wetlands and 0.54 acre of open water pond. Impacts to waters of the United States on-site and downstream of the project area are proposed to be minimized through implementation of best management practices. Appropriate

construction and use of sediment ponds, drainage control structures, diversion ditches, and other best management construction practices are proposed to minimize impacts to waters of the United States.

Compensation for proposed impacts to 11,260 linear feet of stream is proposed to occur through the reconstruction of 10,280 linear feet of stream on-site. Natural stream channel design and establishment of upland riparian corridors along stream channels is proposed. Stream profiles, flow rates and channel dimensions of restored streams are proposed to be as similar as practicable to pre-mining stream conditions. Riparian buffer zones of 50' in width on each stream side would be established with native vegetation. Compensation for proposed impacts to 0.07 acre of wetlands is proposed to occur through the on-site construction of 0.11 acre of wetlands.

The applicant proposes to monitor stream and wetland mitigation for a minimum of five years. The applicant proposes to monitor stream stability, hydrology, chemical parameters, habitat evaluation and survival of vegetation established in the stream buffer zones. The applicant proposes to take corrective measures if mortality of vegetation in the buffer zones exceeds 20 percent, if pre-mining hydrologic conditions are not restored following completion of stream reconstruction and if erosion of streams occurs. No other performance standards have been proposed. The applicant proposes to monitor survival of vegetation established in constructed wetlands. The applicant proposes to take corrective measures if survival of hydrophytic vegetation falls below 80 percent. No other performance standards have been proposed. The applicant has not proposed to protect reconstructed streams and wetlands in their natural state in perpetuity.

A final mitigation plan prepared in accordance with Regulatory Guidance Letter 02-2 will be required for this office to evaluate whether proposed mitigation is sufficient to compensate for the loss of jurisdictional waters of the United States in association with this proposal.

ALTERNATIVE ANALYSIS: A total of 0.07 acre of jurisdictional wetlands would be filled as a result of the proposal. The project does not require access to or siting within the wetlands to fulfill its basic purpose and is considered a non-water dependent activity. The Section 404(b)(1) Guidelines state for non-water dependent activities, practicable alternatives that do not involve wetlands are presumed to be available unless clearly demonstrated otherwise. The applicant is required to provide an alternative analysis that must overcome the presumption prior to receiving authorization for the placement of fill material. A preliminary alternative analysis has been submitted to this office for review.

ATTACHMENTS: Plans of the proposed work are attached to this notice.

WATER QUALITY CERTIFICATION: A Section 401 Water Quality Certification is required for this project. It is the applicant's responsibility to obtain that certification from the Ohio Environmental Protection Agency.

HISTORIC & CULTURAL RESOURCES: The National Register of Historic Places has been consulted and it has been determined there are no properties currently listed on the register that are in the area affected by the project. A copy of this public notice will be sent to the State Historic Preservation Office (SHPO) for their review. Comments concerning archeological sensitivity of a project area should be based upon collected data.

THREATENED & ENDANGERED SPECIES: This project is located within the known or historic range of the Indiana bat (Endangered); sheepnose mussel (Candidate) and snuffbox (Species of Concern).

Based on location, it has been determined the proposal would have no affect on the sheepnose mussel or snuffbox.

Based on project location and habitat availability, this proposal has the potential to affect the Indiana bat. The applicant is coordinating with the Ohio Department of Natural Resources (ODNR) and the United Fish and Wildlife Service (USFWS) to address the requirements outlined in the ODNR Permitting Policy Procedure Directive (PPD) 2004-01: Measures for Protecting the Endangered Indiana Bat. Based on site characteristics, the applicant is required to evaluate on-site portals and conduct surveys, if necessary, and is required to provide detailed, site-specific protective and enhancement measures. The applicant will be required to continue coordination with the USFWS and ODNR to ensure compliance with Permitting PPD 2004-01.

This public notice serves as a request to the U.S. Fish and Wildlife Service for any additional information they may have whether any listed or proposed to be listed endangered or threatened species may be present in the area that would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1972 (as amended).

PUBLIC INTEREST: Any person who has an interest, which may be adversely affected by the issuance of a permit, may request a public hearing. The request must be submitted in writing to the District Engineer on or before the expiration date of this notice and must clearly set forth the interest which may be adversely affected and the manner in which the interest may be adversely affected by the activity.

Interested parties are invited to state any objections they may have to the proposed work. The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the

needs and welfare of the people. In addition, the evaluation of the impact of the activity on the public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency, under the authority of Section 404(b) of the Clean Water Act. Written statements on these factors received in this office on or before the expiration date of this public notice will become a part of the record and will be considered in the final determination. A permit will be granted unless its issuance is found to be contrary to the public interest.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

CLOSE OF COMMENT PERIOD: All comments pertaining to this Public Notice must reach this office on or before the close of the comment period listed on page one of this Public Notice. Persons wishing to submit comments, objections or requests for public hearings concerning the Corps of Engineers permit should write:

U.S. Army Corps of Engineers
ATTN: CELRH-OR-F Public Notice No. 2005-1057-TUS
502 8th Street
Huntington, West Virginia 25701-2070

Please note, the names and addresses of those who submit comments in response to this public notice become part of our administrative record and, as such, are available to the public under provisions of the Freedom of Information Act. Thank you for your interest in our nation's water resources. If you have any questions concerning this public notice, please call Ms. Desiree L. Hann of the Regulatory Mining Analysis Section at (304) 399-6907.

Ginger Mullins
Chief, Regulatory Branch

(O)

Stream ID	Designation	Total Length (ft)	Length in Permit (ft)	Avoided Length (ft)	Ordinary High Water Width (ft)	QHEI Score
Spencer Creek	Per (Sta. 2-16)	7550	1400	4400	2.8	61.5
Spencer Creek	Per (Sta. 16-32)		1600		5.9	
Spencer Creek	Per (Sta. 44-62)		0		7.4	
Spencer Creek	Per (Sta. 62-78)		0		9.1	
Spencer Creek	Per (Sta. 78-88)		150		6.4	
Stream A	Intermittent	920	580	340	2.3	54
Stream A	Perennial	2650	1200	1450	3.5	54
Stream A - 2	Intermittent	450	450	0	1.2	55.5
Stream A - 3	Ephemeral	260	260	0	1.0	
Stream B	Intermittent	940	940	0	1.8	51
Stream B	Perennial	750	370	380	2.1	51
Stream B - 1	Intermittent	170	170	0	1.2	
Stream C	Perennial	2270	1570	700	2.0	52
Stream D	Intermittent	820	820	0	2.0	54.5
Stream D	Perennial	1010	1010	0	2.3	54.5
Stream D - 2	Intermittent	300	300	0	1.6	60.5
Stream D - 3	Intermittent	140	140	0	1.8	56
Stream E	Intermittent	390	360	30	1.5	60
Stream E	Perennial	1260	100	1160	1.9	60
Stream E - 2	Intermittent	400	400	0	1.5	58
Stream F	Intermittent	550	550	0	1.3	61.5
Stream G	Ephemeral	660	620	40	1.0	
Stream H	Intermittent	610	310	300	1.5	50.5
Stream I	Intermittent	550	450	100	2.2	49
U-3 / D-3	Perennial	1180	120	1060	4.7	47.5
DM-2 / D-6	Intermittent	210	30	180	1.0	
S-2 / D-2	Intermittent	1700	0	1700	2.1	
TOTALS		**25,740**	**13,900**	**11,840**		

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Streams in project area
Table 1 of 3

TABLE 1: STREAM IMPACT - PREFERED ALTERNATIVE
North Barnesville
Jurisdictional Waters - Streams

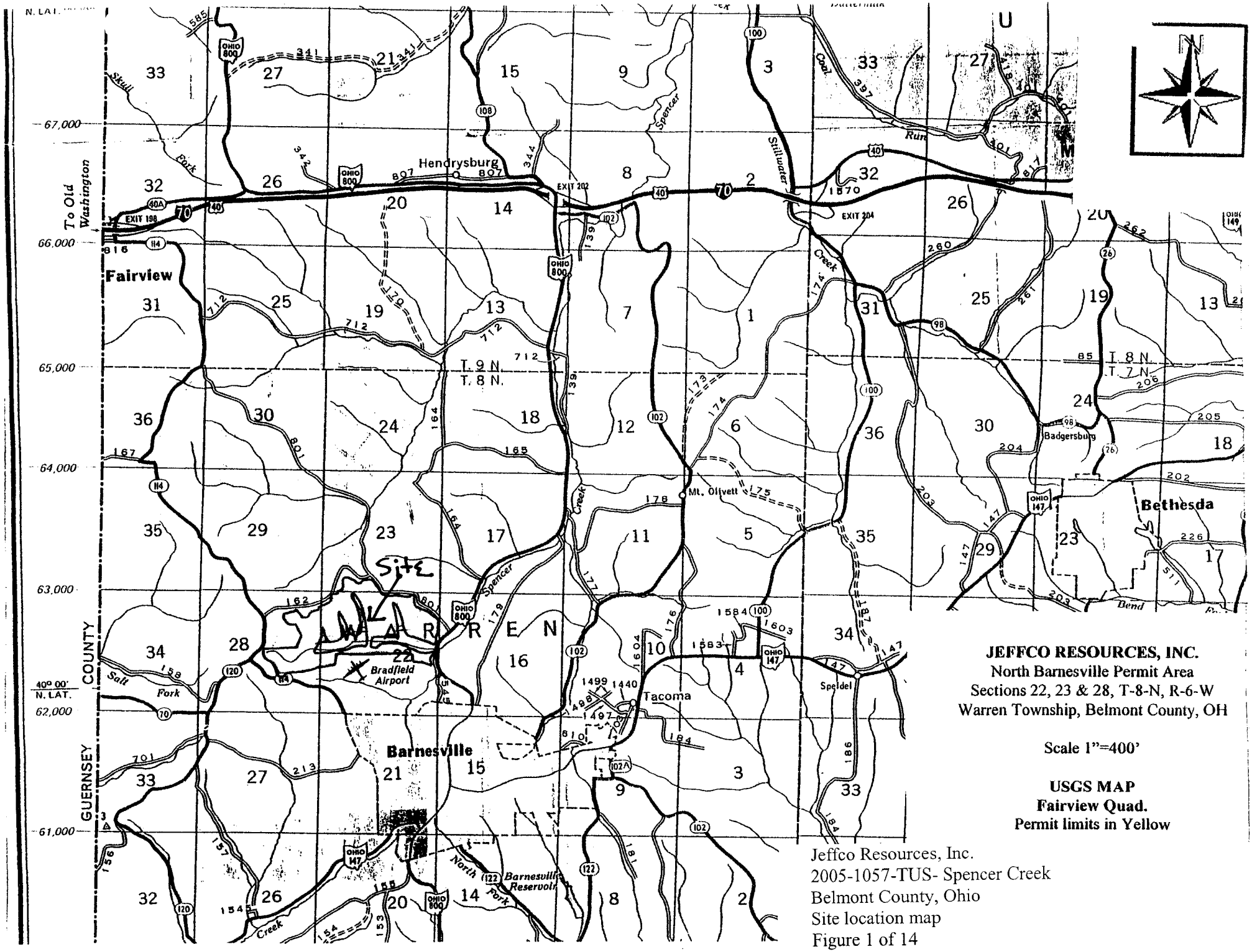
Stream ID	Classification	Length in Permit (ft)	OHWM Width (ft)	Area (ac.)	Impacts					Dredge Feet	Fill Feet	Dredge yd³	Fill yd³	Dredge acres	Fill acres
					Direct	Feet	Indirect	Feet	Temp/Perm						
Spencer Cr	Per (Sta. 2-16)	1400	2.8	0.089	Coal Removal	1400	Sediment Transport	300	Temp	1400	300	144	31	0.089	0.019
Spencer Cr	Per (Sta. 16-32)	1600	5.9	0.216	Coal Removal/Pond 007	950			Temp/Perm	250	700	55	153	0.034	0.095
Spencer Cr	Per (Sta. 44-62)	0	7.4												
Spencer Cr	Per (Sta. 62-78)	0	9.1												
Spencer Cr	Per (Sta. 78-88)	150	6.4	0.022	Haul road crossing	150			Temp	0	150	0	35	0.000	0.022
A	Intermittent	580	2.3	0.031	Coal Removal	350			Perm	350	0	30	0	0.018	0.000
A	Perennial	1200	3.5	0.096	Coal Removal/Haul Rd	1200			Temp/Perm	1100	100	143	13	0.088	0.008
A-2	Intermittent	450	1.2	0.012	Coal Removal	200			Perm	200	0	9	0	0.005	0.000
A-3	Ephemeral	260	1.0	0.006	Coal Removal	260			Perm	260	0	10	0	0.006	0.000
B	Intermittent	940	1.8	0.038	Coal Removal	940			Perm	940	0	61	0	0.038	0.000
B	Perennial	370	2.1	0.018	Coal Removal/Haul Rd	370			Temp/Perm	270	100	21	8	0.013	0.005
B-1	Intermittent	170	1.2	0.005	Coal Removal	170			Perm	170	0	7	0	0.005	0.000
C	Intermittent	1570	2.0	0.072	Coal Removal	1550			Perm	1550	0	115	0	0.071	0.000
D	Intermittent	820	2.0	0.038	Coal Removal	250			Perm	250	0	19	0	0.011	0.000
D	Perennial	1010	2.3	0.053	Coal Removal	500	Sediment Transport	250	Temp/Perm	500	250	43	21	0.026	0.013
D-2	Intermittent	300	1.6	0.011	Coal Removal	300			Perm	300	0	18	0	0.011	0.000
D-3	Intermittent	140	1.8	0.006											
E	Intermittent	360	1.5	0.012	Coal Removal	360			Perm	360	0	20	0	0.012	0.000
E	Perennial	100	1.9	0.004	Haul road crossing	100			Temp	0	100	0	7	0.000	0.004
E-2	Intermittent	400	1.5	0.014	Coal Removal	400			Perm	400	0	22	0	0.014	0.000
F	Intermittent	550	1.3	0.017	Coal Removal	550			Perm	550	0	27	0	0.017	0.000
G	Ephemeral	620	1.0	0.014	Coal Removal	620			Perm	620	0	23	0	0.014	0.000
H	Intermittent	310	1.5	0.011	Coal Removal	310			Perm	310	0	17	0	0.011	0.000
I	Intermittent	450	2.2	0.022	Coal Removal	230			Perm	230	0	18	0	0.011	0.000
U-3 / D-3	Intermittent	120	4.7	0.013	None		Haul road crossing	100		0	0	0	0	0.000	0.000
DM-2 / D-6	Intermittent	30	1.0	0.001											
S-2 / D-2	Intermittent	0	2.1	0.000											
TOTALS		**13,900**		**0.821**		**11160**		**650**		**10010**	**1700**	**800**	**268**	**0.496**	**0.166**

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Proposed stream impacts
Table 2 of 3

TABLE 2: WETLAND IMPACTS - PREFERRED ALTERNATIVE
North Barnesville
Jurisdictional Waters - Wetlands

Wetland ID	Classification	Wetland Area (ac.)	Area within Permit (ac.)	Impacts			Fill yd^3	Mitigation Acres
				Direct Impacts	Acres	Temp/Perm		
Wetland "A"	Riverine Intermittent Open Water	1.83						
Wetland "B"	Palustrine Emergent	0.10						
Wetland "C"	Palustrine Emergent	0.02	0.02	Mining/Backfilling	0.02	Perm.	32	0.03
Wetland "D"	Palustrine Emergent	0.29	0.29	None	–	–	–	–
Wetland "E"	Palustrine Emergent	0.03	0.03	Pond 007	0.03	Perm.	48	0.045
Wetland "F"	Palustrine Emergent	0.02	0.02	Mining/Backfilling	0.02	Perm.	32	0.03
Wetland "G"	Palustrine Emergent	0.12	0.12	None	–	–	–	–
Wetland "I"	Palustrine Emergent	0.06						
TOTALS		**2.47**	**0.48**		**0.07**		**113**	**0.11**

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Proposed wetland impacts
Table 3 of 3



JEFFCO RESOURCES, INC.
North Barnesville Permit Area
Sections 22, 23 & 28, T-8-N, R-6-W
Warren Township, Belmont County, OH

Scale 1"=400'

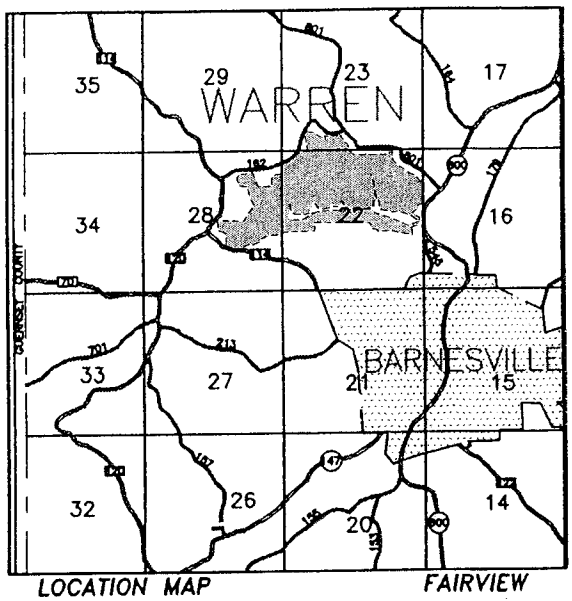
USGS MAP
Fairview Quad.
Permit limits in Yellow

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Site location map
Figure 1 of 14

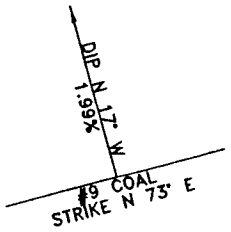
LEGEND

- PERMIT LIMITS
- AUGER MINE AREA
- TEST HOLE
- DIVERSION DITCH, Ⓐ DITCH I.D.
- NATURAL OR PUMPED DRAINAGE
- DEEP MINE ENTRY
- TSP — TOP SOIL STOCK PILES
- COAL OUTCROP LINE
- PERENNIAL STREAM
- INTERMITTENT STREAM
- EPHEMERAL STREAM
- UTILITY (e.g. gas, electric, telephone)
- EXISTING IMPOUNDMENT
- TREATMENT FACILITY
- SEDIMENT POND
- x · x · x · x · x — EXISTING HIGHWALL
- — · — · — FINAL HIGHWALL
- 10° — SLOPE MEASUREMENT
- [S] — PIT IDENTIFICATION
- (S) — INDICATES SURFACE OWNER
- (M) — INDICATES MINERAL OWNER
- (L) — INDICATES LEASEE
- OIL AND GAS WELL
- OCCUPIED AND UNOCCUPIED STRUCTURE
- COMMERCIAL BUILDING
- CHURCH
- BEGIN MINING
- END MINING
- PROPERTY LINE
- ROAD
- DW– DUG WELL
- WL– DRILLED WELL (LOG AVAILABLE)
- W– DRILLED WELL (NO LOG AVAILABLE)
- DS– DEVELOPED SPRING
- S– UNDEVELOPED SPRING
- SZ– SEEP ZONE
- PUBLIC WATER LINE
- SEEP, SEEPAGE ZONE, SWAMP
- DM– DEEP MINE WATER DISCHARGE
- U– UPSTREAM SAMPLING STATION
- D– DOWNSTREAM SAMPLING STATION
- FORMER SOURCE OF PUBLIC WATER SUPPLY
- M– MONITORING STATION
- BACKGROUND SAMPLING STATION
- 1000' BOUNDARY LINE
- 100' STREAM BUFFER ZONE
- PERMIT No. D–2122
- PERMIT No. D–1059
- WETLANDS

A	= 1.83 AC.	E	= 0.03 AC.
B	= 0.10 AC.	F	= 0.02 AC.
C	= 0.02 AC.	G	= 0.12 AC.
D	= 0.29 AC.	I	= 0.06 AC.



LOCATION MAP — FAIRVIEW QUADRANGLE



SUMMARY

AREA OF STRIP COAL	171.8	AC.
AREA OF AUGER COAL	86.6	AC.
AREA OF POND	5.9	AC.
AREA OF HAUL ROAD	3.4	AC.
AREA OF TOPSOIL STORAGE	16.6	AC.
UNDEVELOPED TO BE REVEGETATED WITH TREES/SHRUBS	320.5	AC.
TOTAL	391.0	AC.

AREA TO BE AFFECTED FIRST YEAR: 20.0 Acres

SPENCER CREEK DRAINAGE BASIN

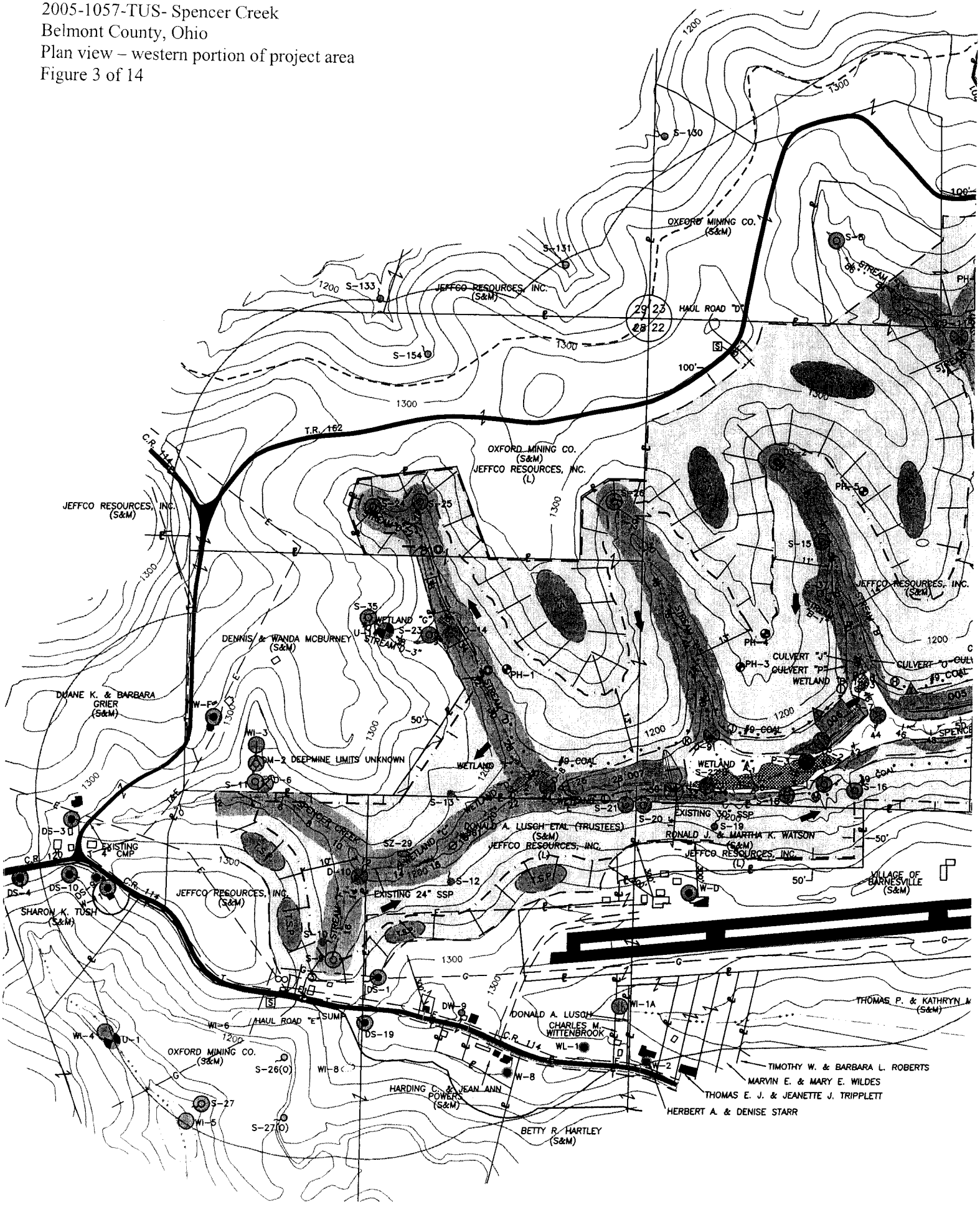
0' 400' 800' 1200'

APPLICATION / HYDROLOGY MAP	#10361
JEFFCO RESOURCES, INC.	

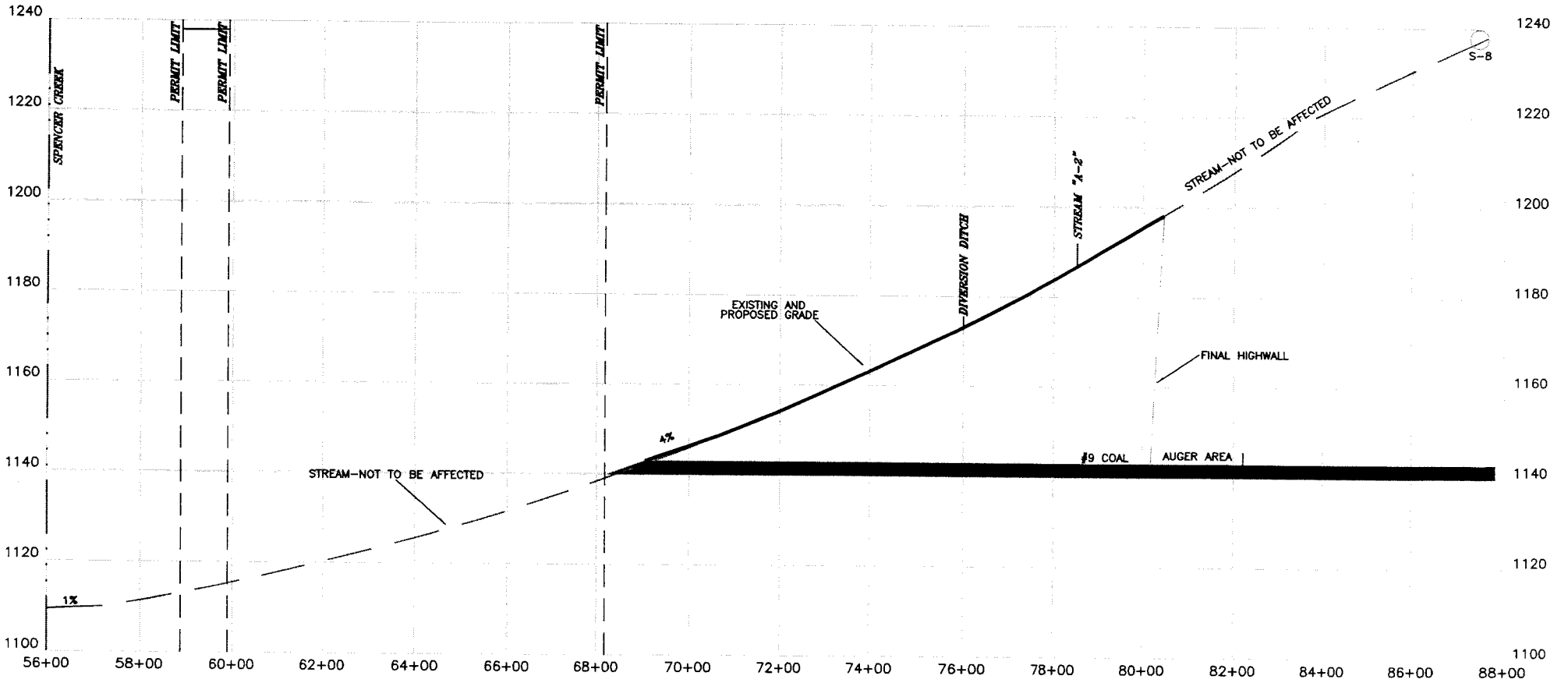
SECTION 22, 23, 28 (T–8–N, R–6–W)
BELMONT COUNTY
SCALE 1"=600' CONTOUR I
DATE: 12/11/06 REVISEI

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Legend for plan view mapping of project area
Figure 2 of 14

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Plan view – western portion of project area
Figure 3 of 14



Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Plan view – eastern portion of project area
Figure 4 of 14

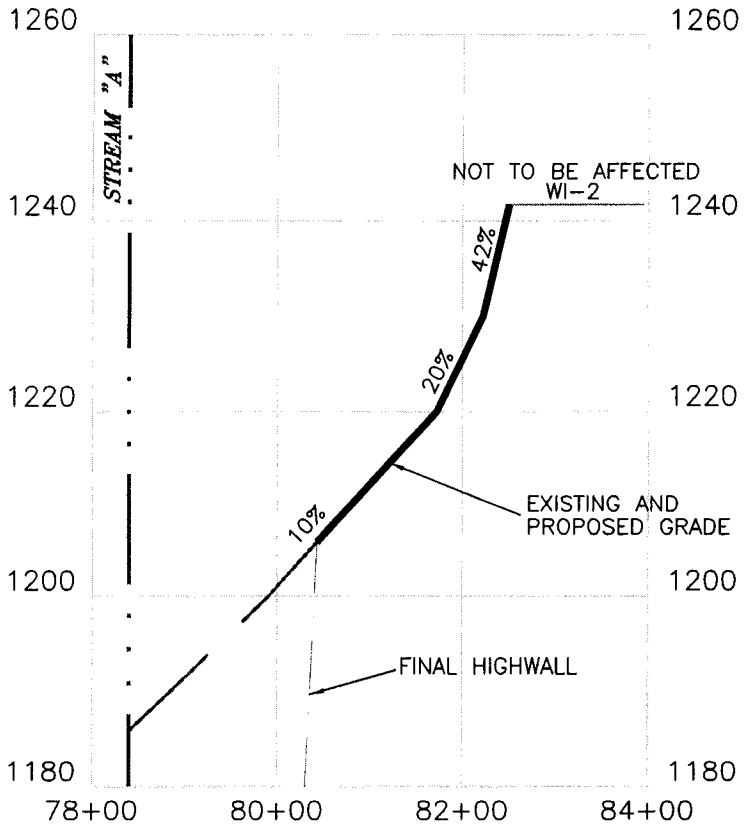


PROFILE OF STREAM "A"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

NOTES:

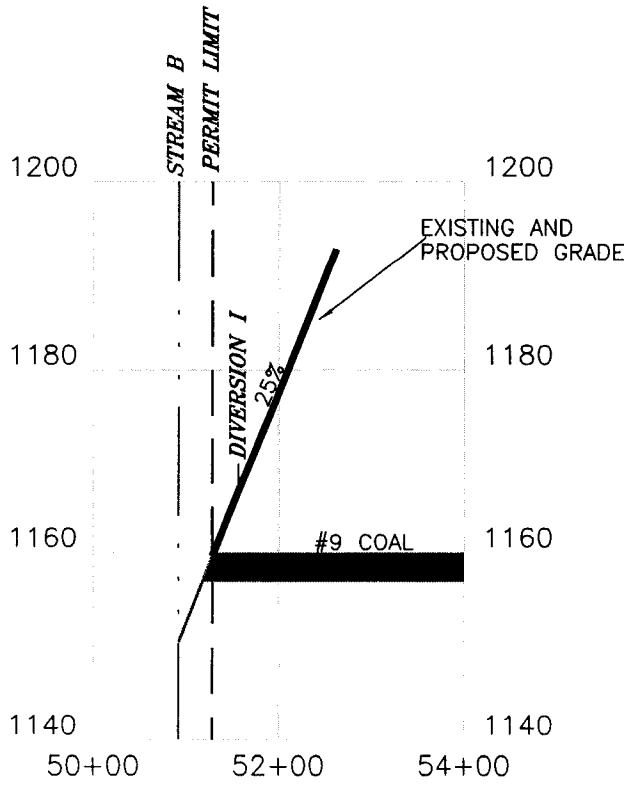
(1) DESIGN CRITERIA IS BASED ON "A NATURAL CHANNEL DESIGN PROCEDURE FOR STEEP AND MODERATELY STEEP STREAMS" ISSUED BY THE OHIO DEPARTMENT OF NATURAL RESOURCES (

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Stream A profile
Figure 5 of 14



PROFILE OF STREAM "A-2"

SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



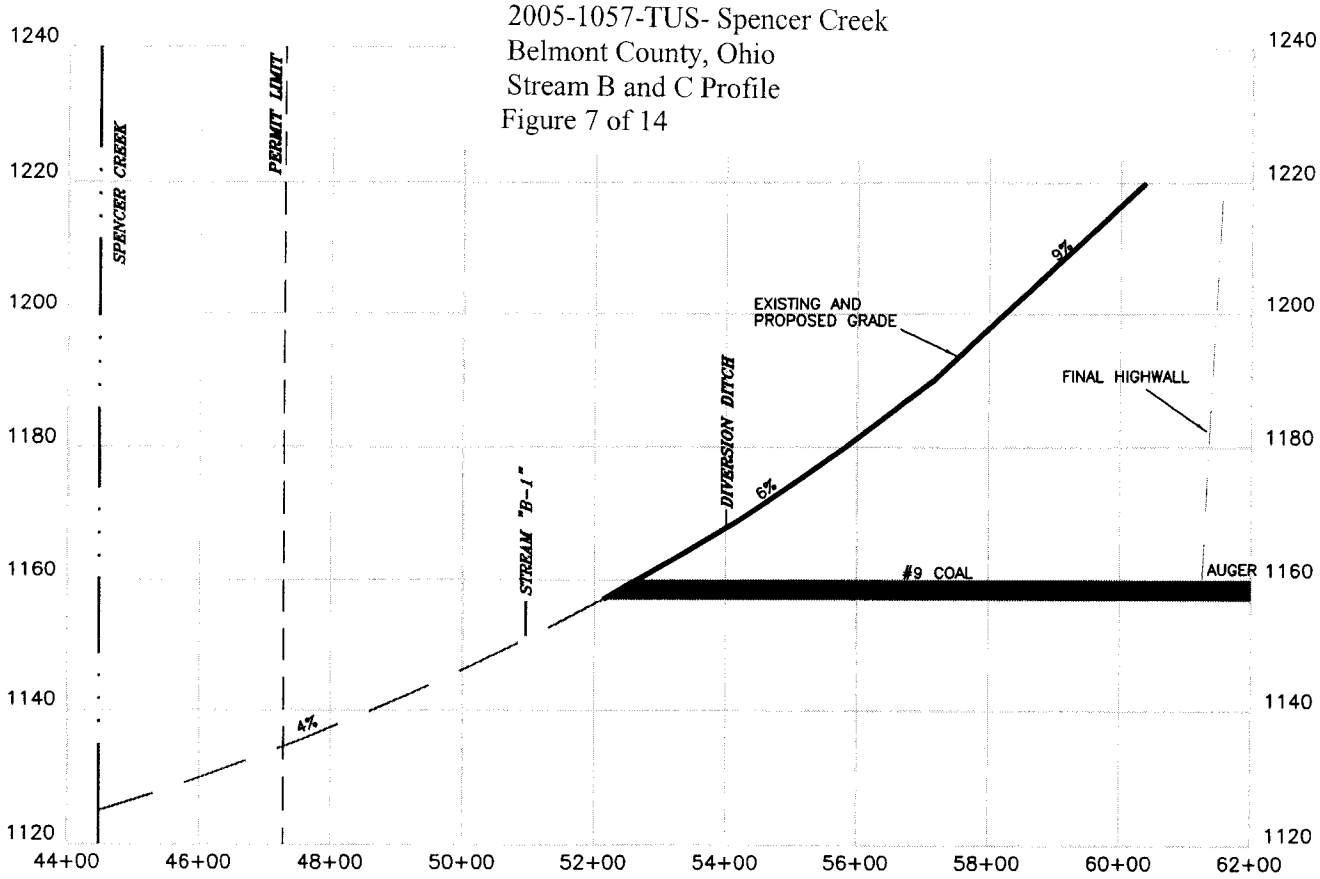
PROFILE OF STREAM "B-1"

SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

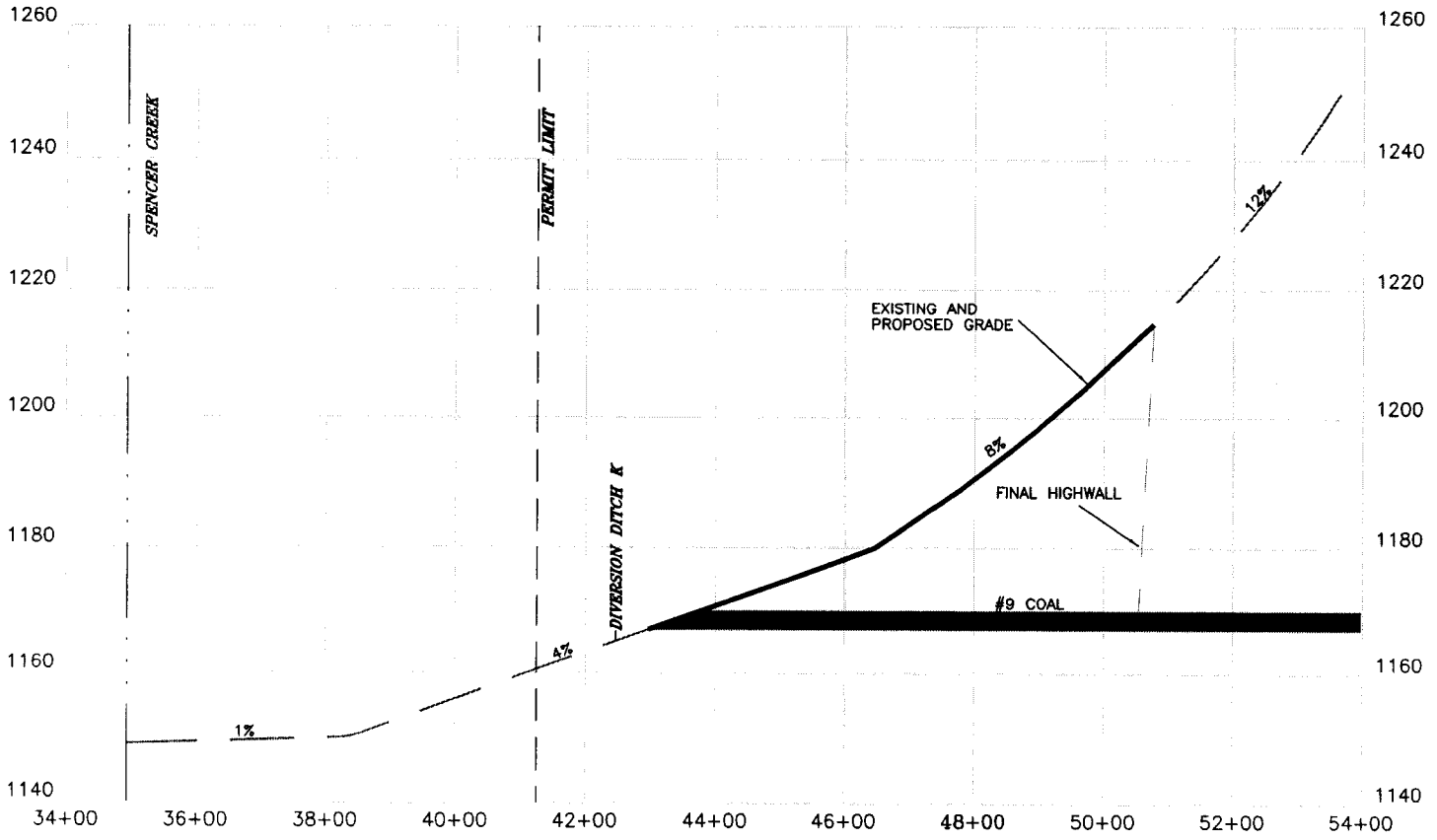
) S DIVISION OF BER 15, 1999. = LESS CHANNELS 'E DECREASED, WITHIN YEAR, WELL O THE EXISTING

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Stream A-2 and B-1 Profile
Figure 6 of 14

Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Stream B and C Profile
Figure 7 of 14

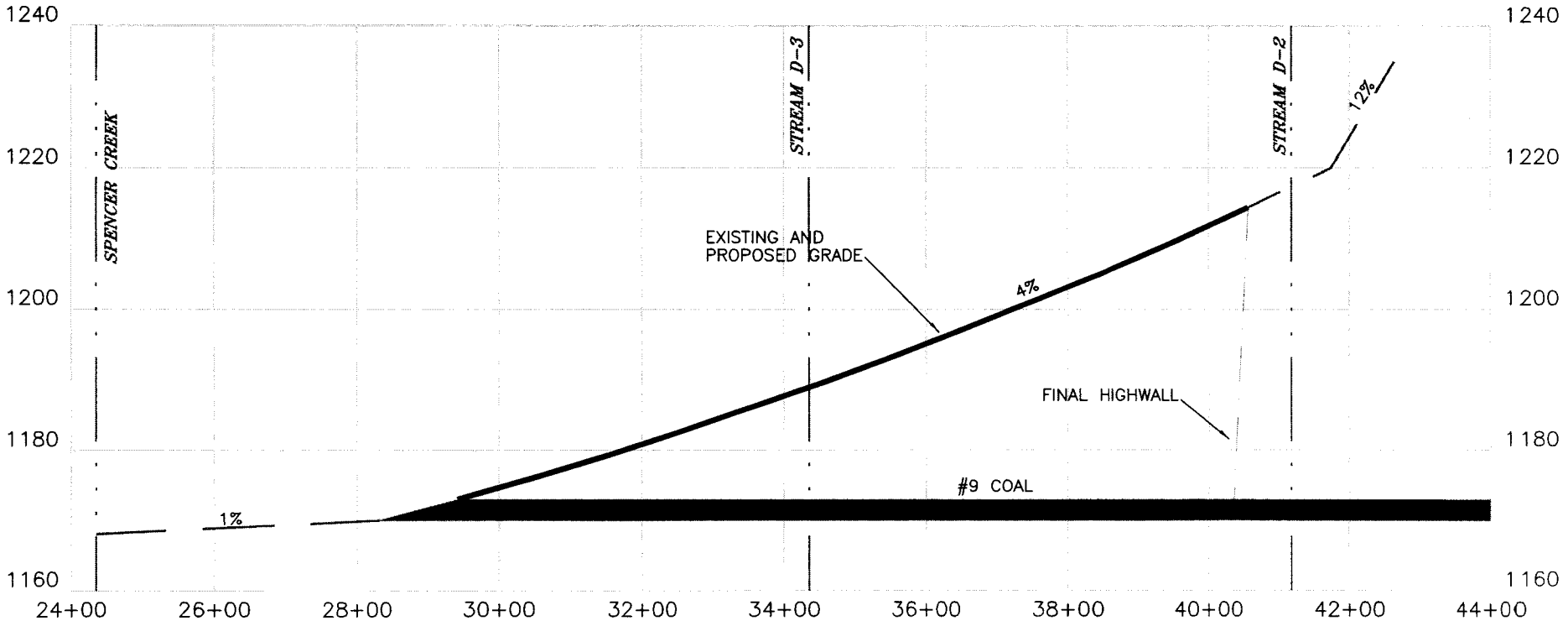


PROFILE OF STREAM "B"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



PROFILE OF STREAM "C"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS CON
WITH THE REQUIREMENTS OF RULE 1501:13-9-04 OF



PROFILE OF STREAM "D"

SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

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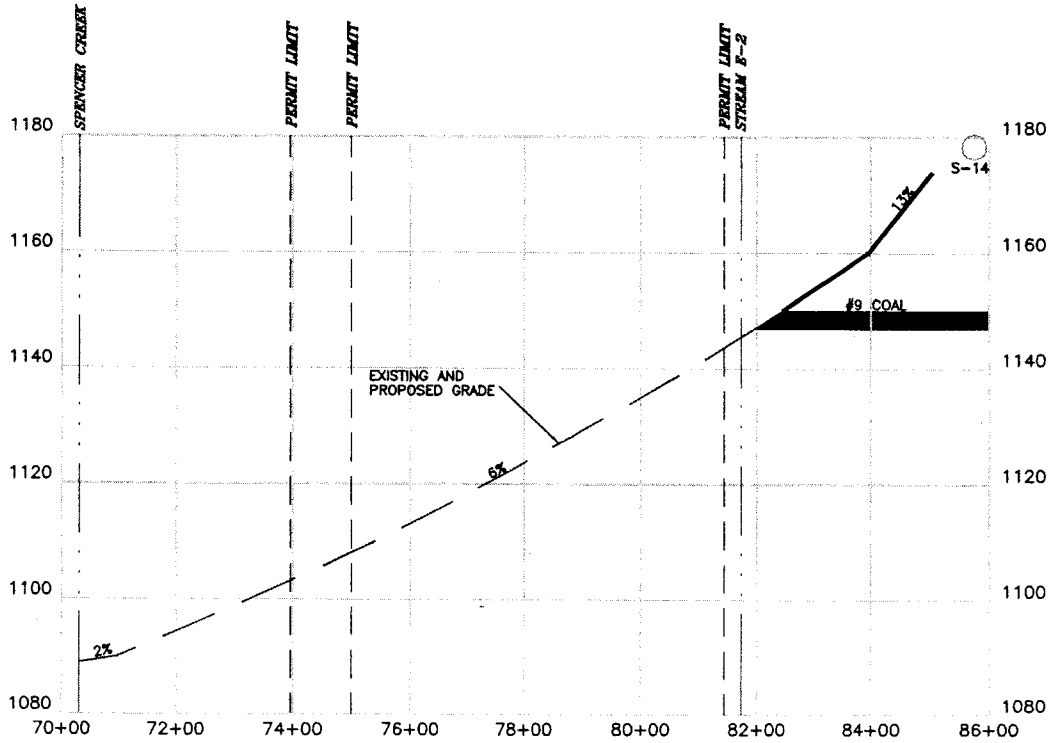
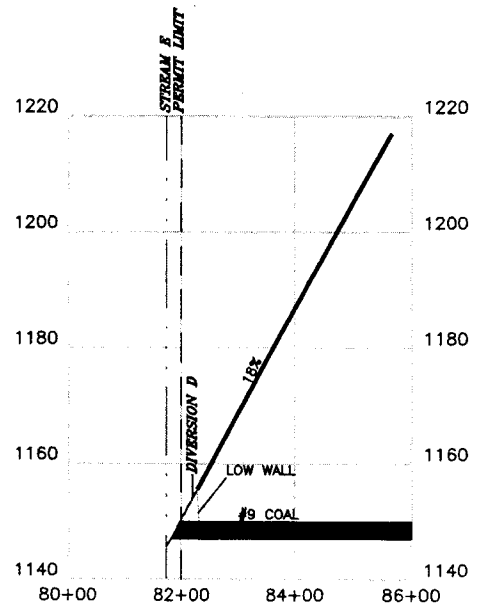
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Stream D Profile
Figure 8 of 14

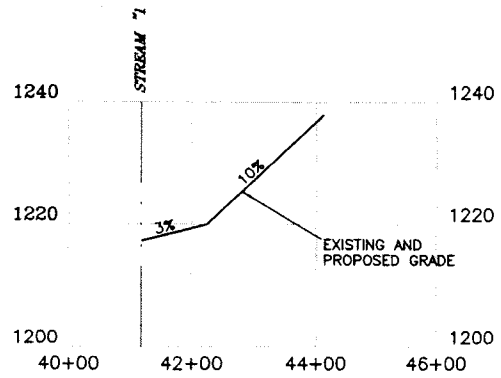


PROFILE OF STREAM "E"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

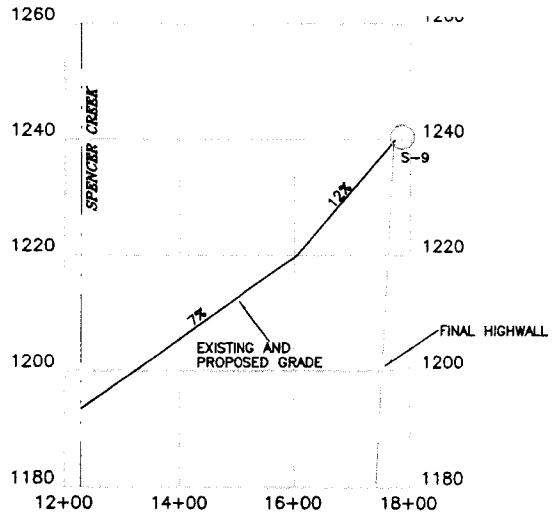


PROFILE OF STREAM "E-2"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

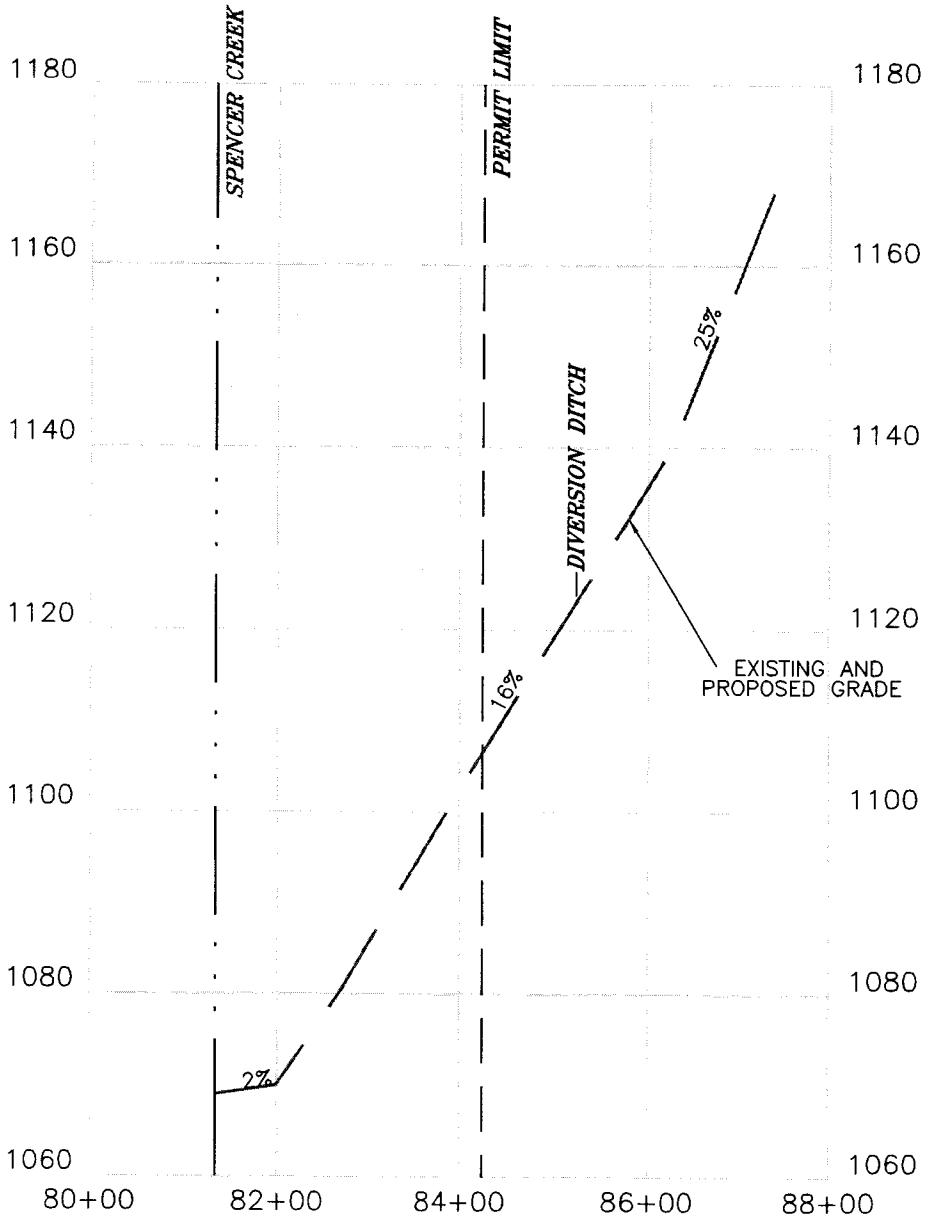
Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Stream D-2, E, E-2 and F Profile
Figure 9 of 14



PROFILE OF STREAM "D-2"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

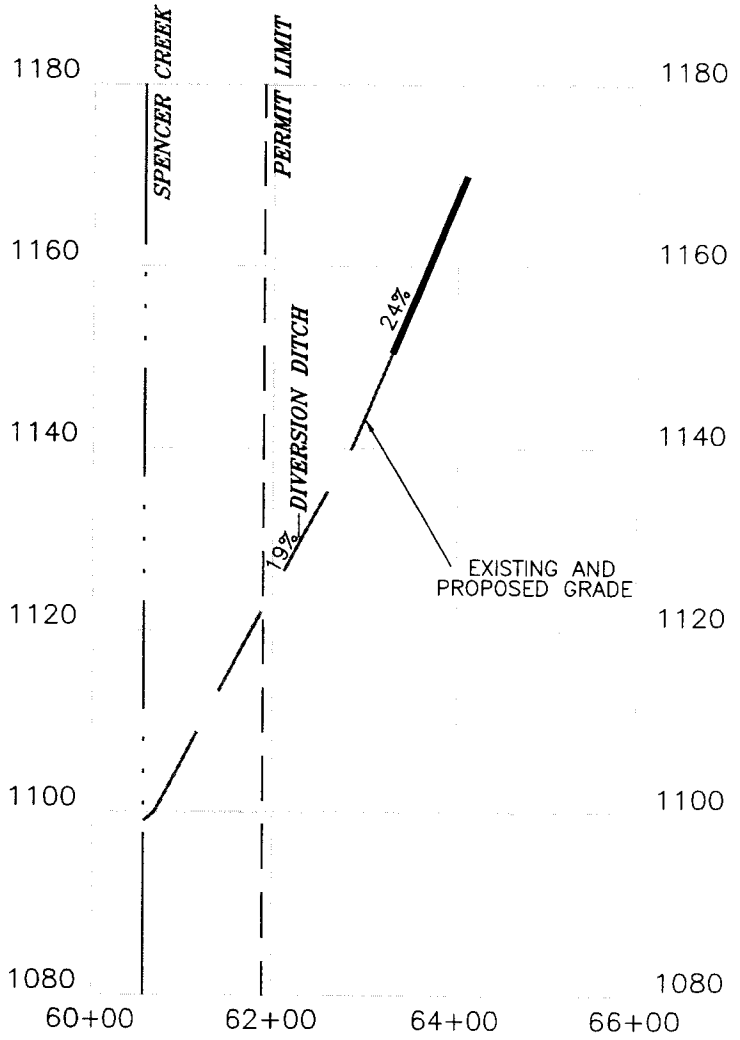


PROFILE OF STREAM "F"
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



PROFILE OF STREAM "H"

SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



PROFILE OF STREAM "I"

SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

NOTES:

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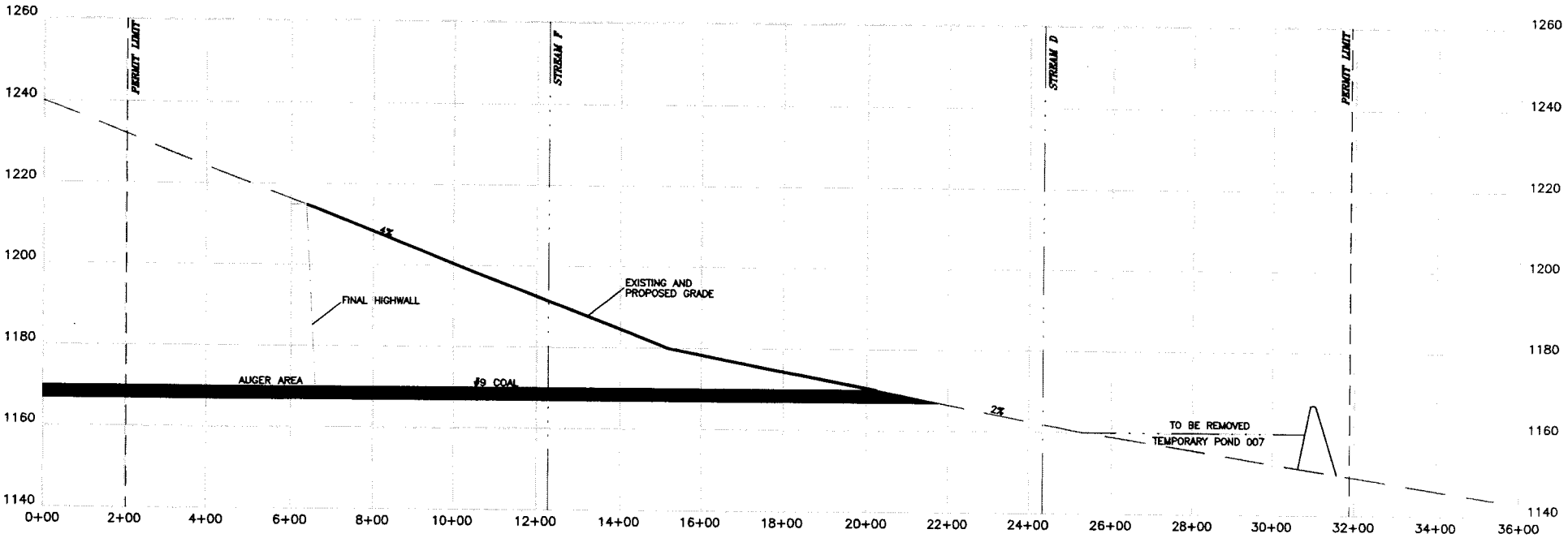
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Stream H and I Profile
Figure 10 of 14



PROFILE OF SPENCER CREEK

SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'

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2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Spencer Creek Profile
Figure 11 of 14

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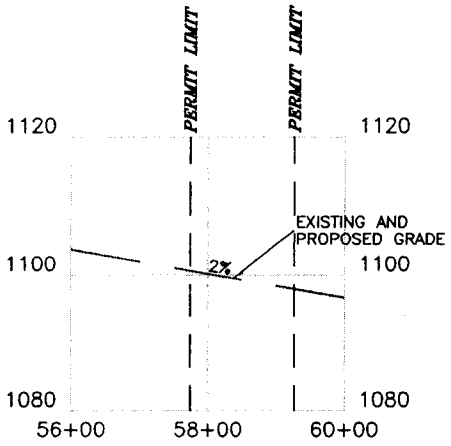
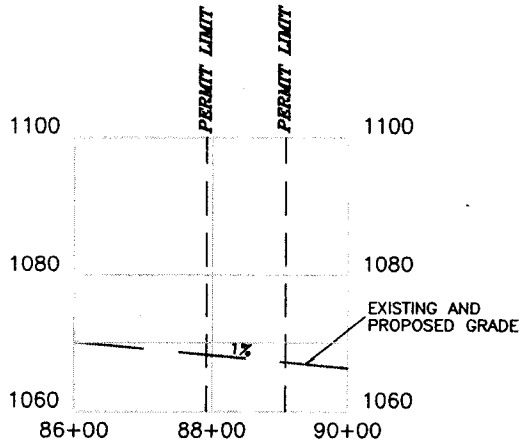
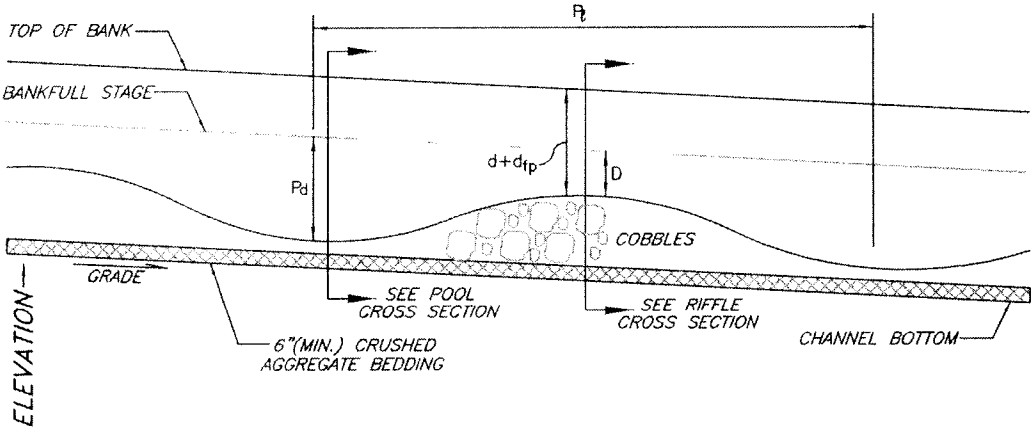
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Typical channel profile
Figure 12 of 14



PROFILE OF SPENCER CREEK
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



PROFILE OF STREAM U-3/D-3
SCALES: HORIZONTAL 1" = 200'
VERTICAL 1" = 20'



STATION— 4%+ TYPICAL CHANNEL PROFILE

W_{bf} – BANKFULL WIDTH – THE SURFACE WIDTH OF THE STREAM MEASURED AT THE STAGE OF THE BANKFULL DISCHARGE.

D – MAX RIFFLE DEPTH – THE MAXIMUM DEPTH OF A CHANNEL AT A RIFFLE. THE RIFFLE IS THE SHALLOW AND STEEP FACET OF THE CHANNEL

d_{fp} – FLOOD PRONE DEPTH

R – RADIUS OF CURVATURE – THE RADIUS OF THE BENDS IN THE BANKFULL CHANNEL.

d – BANKFULL DEPTH

b – CHANNEL BOTTOM WIDTH

T – TOP WIDTH OF CHANNEL

W – MEANDER WIDTH – THE LATERAL EXTENT OF THE BANKFULL CHANNEL MEASURED PERPENDICULAR TO THE VERTICAL FALL OF THE CHANNEL.

L – MEANDER LENGTH – THE STRAIGHT LINE DISTANCE THROUGH ONE WAVELENGTH OF THE CHANNEL.

F – FLOOD PRONE WIDTH.

S – SINUOSITY – THE RATIO OF STREAM LENGTH TO VALLEY DISTANCE. IT INDICATES THE DEGREE OF SERPENTINE OR WAVY FORM OF THE CHANNEL.

P_w – POOL WIDTH – WIDTH OF BANKFULL CHANNEL AT POOL.

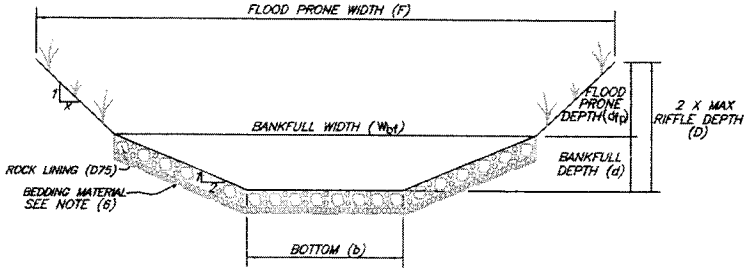
Pd – MAXIMUM POOL DEPTH – THE MAXIMUM DEPTH OF THE CHANNEL AT A POOL. A POOL IS THE DEEP AND FLAT FACET OF THE CHANNEL.

P_t – POOL TO POOL LENGTH – HORIZONTAL DISTANCE BETWEEN TWO POOLS IN A CHANNEL PROFILE.

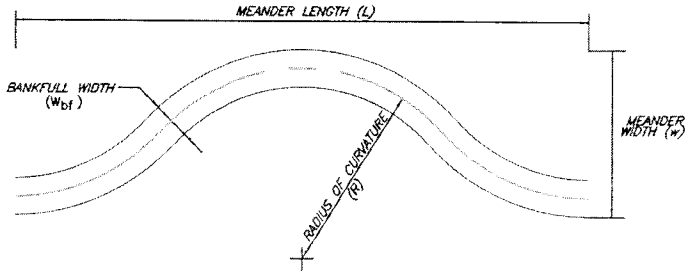
X – SIDESLOPES BELOW BANKFULL WIDTH.

X_1 – SIDESLOPES OF FLOOD PRONE AREA.

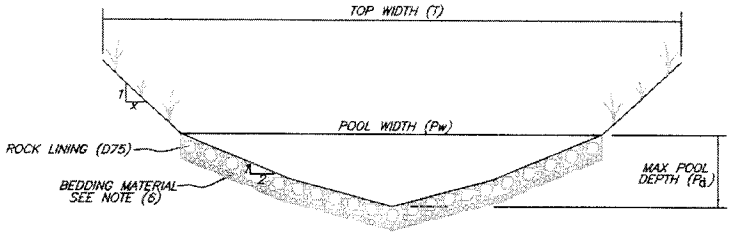
DESIGN STORM, SCS TYPE
1.5 YR, 6 HR STORM = 1
100 YR, 6 HR STORM = 3



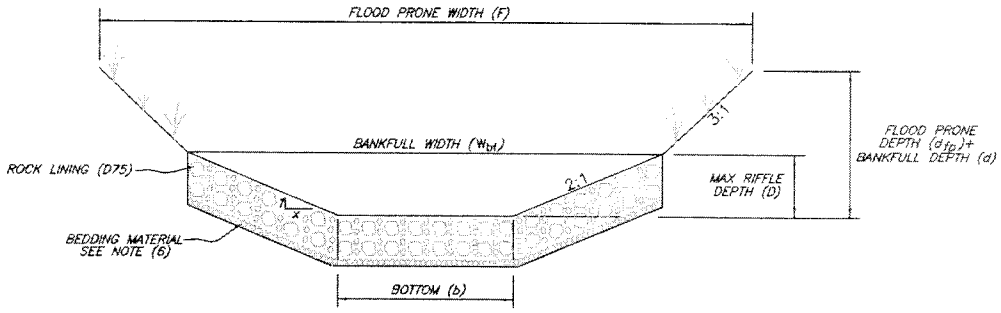
LESS THAN 4% CHANNEL CROSS SECTION



CHANNEL PATTERN



4%+ POOL CROSS SECTION



4%+ RIFFLE CROSS SECTION

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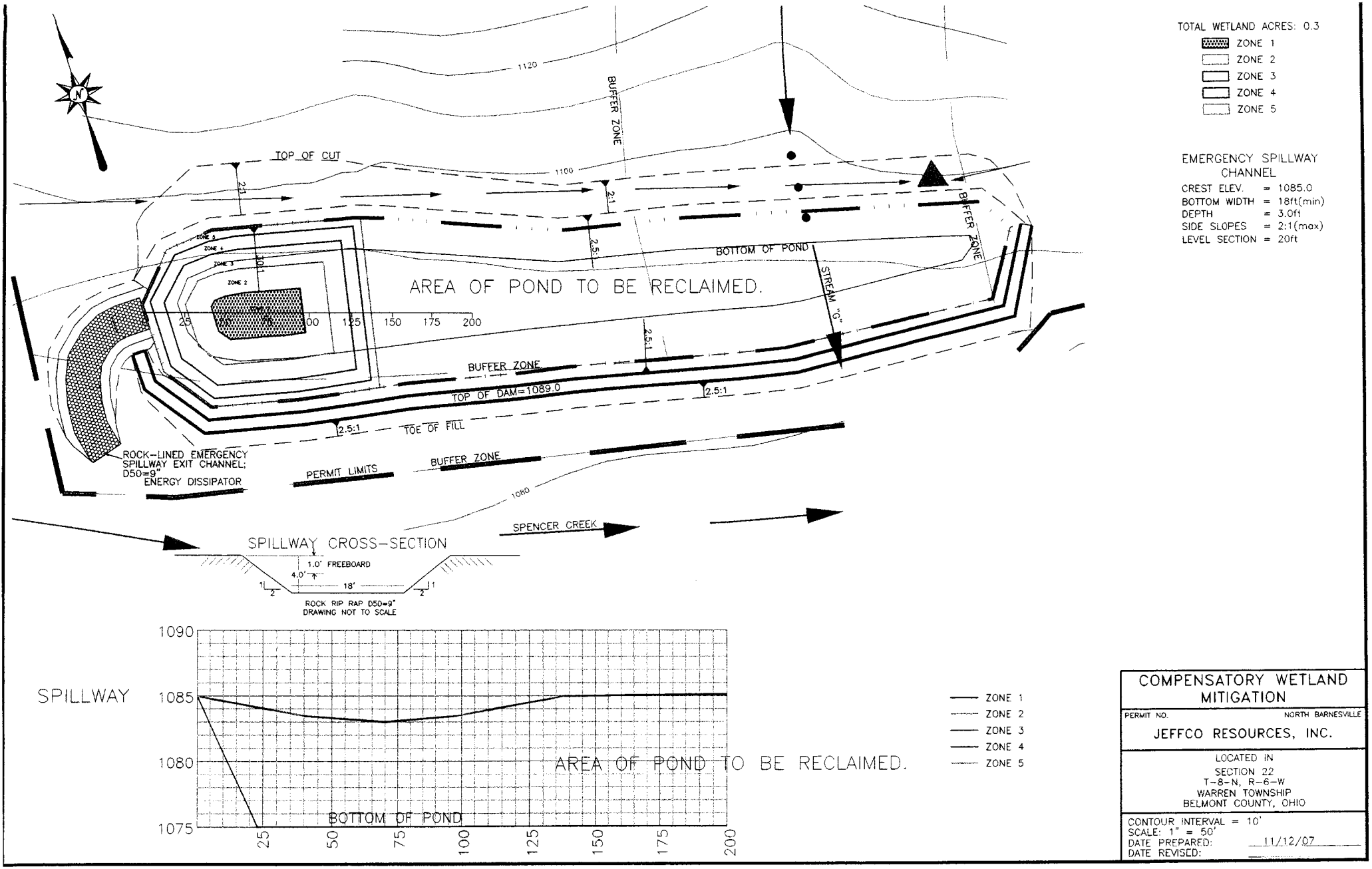
Belmont County, Ohio
Stream reconstruction cross-sections
Figure 13 of 14



Jeffco Resources, Inc.
2005-1057-TUS- Spencer Creek
Belmont County, Ohio
Wetland mitigation plan
Figure 14 of 14